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ABSTRACT

This module, developed by the Research Applications for Teaching (RAFT) project, was written to assist students to write lesson plans that are effective and interactive. Students are given directions for the preparation of behavioral objectives and for the selection of appropriate instructional methodologies to meet the widely varying needs of preservice teachers in a class. Each component of the lesson plan is discussed and an outline for a lesson plan is given. An example lesson plan is presented. Students prepare a lesson plan in their area of specialization and teach it in simulated conditions. They also perform a series of structured classroom observations in which they observe the instructional plans and teaching methodologies of teachers in regular classrooms. Results of their observations are recorded on data sheets included in the appendices of the module. A major effort is made to assist students to plan lessons which allow for interaction among students. Instruction is given on planning lessons based on inquiry and discovery processes. (JD)

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PREPARATION FOR INSTRUCTION

A Module of Instruction in Teacher Education

Prepared for Project RAFT

Department of Curriculum and Instruction

Mississippi State University

PREPARATION FOR INSTRUCTION

by

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Department of Curriculum and Instruction

Mississippi State University

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August 1987

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HOW TO USE THIS MODULE

This instructional module on Planning for Instruction has been developed to assist students in undergraduate programs in teacher education to write lesson plans. Students are given directions for the preparation of behavioral objectives and for the selection of appropriate instructional methodologies to meet the widely varying needs of students in a class. Each component of the lesson plan is discussed, and an outline for a lesson plan is given. An example lesson plan is presented.

Students are expected to be able to recognize the domain and level of instructional objectives and to write example objectives appropriate for expected behaviors at all levels of the cognitive, affective, and psychomotor domains. Students are expected to prepare an example lesson plan in the area of specialization. They are also expected to do a series of structured classroom observations in which they observe the instructional plans and teaching methodologies of regular teachers. Results of their observations are recorded on data sheets included in the Appendices.

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PLANNING FOR VARIETY

Objective: The student will be able to write or state a rationale for putting meaningful variety into lesson plans relative to the variables of learner characteristics, intended outcomes, and administrative conditions.

Effective educational planners are familiar with the tools of their trade, their students, and available materials and processes for teaching. The reasons for using a variety of classroom activities are more complex than trying to entertain students. Teaching/learning techniques are tools that are selected in response to conditions that affect learning. The value of providing meaningful variety is found in trying to match instructional methodology with the inherent variations that occur in students, the intended outcomes from instruction, and the administrative conditions that occur in schools.

Student Variables

Schools exist for students. Hence, students must be the central focus in education. When students do not learn, it may be because they, rather than the subject matter, are misunderstood. Within any classroom group, there is great variation in individual educational, intellectual, emotional, social, and physical characteristics. Each student is a unique combination of characteristics whose needs must be served in the educational setting. Any plan for instruction should take into account the specific characteristics of the learners to be served.

Educational Characteristics

Variations in educational characteristics include differences in student achievement levels in the basic skills of reading, computing, writing, and other relevant areas of instruction. Information relative to the educational characteristics of individual students may be obtained by reviewing records of significant experiences, course records, administrative records, or preassessment instruments, as well as by teacher observations, interviews, and assessments. When information about each student's educational development is known, instructional sequences and materials are more easily selected.

Intellectual Characteristics

Essentially, intellectual characteristics may be categorized into two areas, variations in learning potential and in learning style.

Learning Potential. Variations in learning potential involve the rate, quantity, and levels of objectives that students have the ability to learn. These variables are often measured with IQ tests and other mental aptitude measures; they may also be determined by teacher assessment and observation. Decisions relevant to levels of expectations, pacing, kinds of practice, and amounts of practice are based upon this information.

Learning Style. The effect of learning styles on learning has received a great deal of attention in recent years. Unique to each student, learning styles consist of the conditions under which the student prefers to learn as well as the sensory modality preferred. The conditions of learning include such variations as fast paced/leisurely paced, quiet background/noisy background, easy work/

challenging work, individual activities/group activities, and formal classroom structure/informal classroom structure.

The second consideration in learning styles is the student's preferred learning mode. Most material is learned through the visual mode (seeing), the auditory mode (hearing), and the action mode (doing). After the teacher has identified the learning styles that are most successful with each student, activities may be chosen and used to strengthen the student's ability. When the student has learned successfully with a particular style, alternate techniques may be introduced and tried so that new styles may be developed to correct weaknesses. For example, a student who learns well by doing may experience problems and waste time trying to install a tape player and speakers in an automobile without reading the instructions. The teacher can help the student develop the learning-by-doing style, but may also provide encouragement to read instructions first.

Many authorities believe that how students learn is perhaps the single most important factor in their academic achievement (Dunn & Price, 1977; Robinson & Gray, 1974). A recognition of individual differences in learning styles can help curriculum planners understand why some students have difficulty in mastering specific skills. Proponents of the learning styles movement (Barbe & Swassing, 1976) further propose that variability in student performance results not so much from discrepancies in intelligence but that such deviations are due to different styles of learning. In support of this view (Clements, 1976), investigations have demonstrated increased academic achievement among students taught as a function of their individual

learning styles.

Emotional and Social Characteristics

In planning, the teacher must have flexibility to change techniques when particular students experience difficulty. Emotional characteristics vary greatly from student to student, from day to day, and from hour to hour. Perceptive teachers can identify interest and attitude characteristics by means of student conferences and interviews, in-class and out-of-class discussions, pupil autobiographies, questionnaires, and values clarification activities.

Students also vary in social growth in such areas of interpersonal skills as cooperation, adaptability, leadership, dependability, and initiative. Sociograms, "guess-who" charts, social distance charts, and perceptive observations are useful sources of data on the social development of students in a classroom group.

Physical Characteristics

Instruction can be more meaningful if the selection of teaching/learning techniques is responsive to the physical characteristics of students. Some students have sensory handicaps in seeing, hearing, and perceptual-motor skills. So-called normal students may also vary in numerous ways--in physical speed, endurance, reaction time, appearance, size, and maturity. Teaching/learning techniques should, therefore, be designed to help develop the necessary physical characteristics and utilize them in a positive manner without exceeding the student's capability.

When teachers are aware of these differences, they can select appropriate approaches to introduce, demonstrate, and practice physical

development skills. Many cognitive and affective behaviors may also be reinforced by using the physical "doing" activities. With such techniques, students experience abstract phenomena or confirm the abstractions through more than one sense modality.

Matching of student characteristics and teaching/learning techniques is difficult. When it is done well, however, instruction will be more effective. Continuous efforts should be made to find student strengths and to capitalize on them.

Intended Outcomes

Intended outcomes, the planned behavioral changes which result from an organized module of instruction, fall within three domains--cognitive (thinking), psychomotor (physically doing), and affective (feeling). According to various authors, descriptions of teaching are divided into these three or more levels. In developing competency in any of the three domains, students should: (1) receive information about the behavior; (2) experience the behavior; and (3) practice the behavior. No single technique is adequate to communicate all three steps. Teachers must have a large collection of teaching/learning techniques from which to choose and considerable skill in selecting and using them in order to effectively help students develop competency in the various levels of the three domains.

Administrative Conditions

Although the number and magnitude of administrative variables differ from day to day and from school to school, in all schools teachers must compensate for them from time to time. These variables may include the following:

--Time of day

--Class or school events preceding or following the class

--Size of class

--Student responsibilities after school

--Elective or required class.

All of these factors must be considered in the teacher's decision as to what will take place in the classroom.

WRITING PERFORMANCE OBJECTIVES

Objectives: After completing this section, the student will be able to:

1. Analyze a cognitive, psychomotor, or affective behavior in terms of domain and levels within the domain.
2. State an intended instructional outcome in a student-oriented performance objective that includes the important conditions, observable behavior, and level of performance.

What are Intended Outcomes?

Intended outcomes in learners are changes in behavior expressed in terms of either cognitive, affective, or psychomotor domains. The cognitive domain consists of intellectual responses made by the learner. Such responses may include the solving of mathematical problems, the writing of an essay, or the analysis of a work plan to find inconsistencies. The affective domain involves valuing, emotional or attitudinal responses made by the learner. This domain is concerned with preferences, appreciations, and interests of students. The psychomotor domain consists of physical responses made by the student, as in the skilled use of tools or in performance in sports.

Each domain has been classified by Bloom (1956) into levels characterizing the behavioral responses within the domains from lowest to highest response levels. Following is a more detailed description for each domain accompanied by selective action verbs used to describe behaviors within each domain.

Cognitive Domain

The six levels of the cognitive domain as described by Bloom are

knowledge, comprehension, application, analysis, synthesis, and evaluation.

Knowledge. This low domain level emphasizes remembering by recall or recognition. Expected student responses at this level are not too different from the way in which knowledge was originally learned. Verbs describing behavioral tasks are: defines, recalls, lists, or recognizes.

Comprehension. This level emphasizes a grasping of the meaning of material presented by the teacher. It deals with understanding the content and involves the ability of the student to interpret or translate from abstract to simple phrases or a generalization. Behavioral tasks for students are: states in own words, gives an example of, illustrates, describes, summarizes, and interprets.

Application. The application level involves student behaviors associated with applying what is remembered and comprehended. Application also involves connecting what is learned to real life problems. Representative behavioral tasks for students are: chooses appropriate procedure, applies a principle, uses an approach, identifies the solution.

Analysis: In this domain level, the student breaks material into constituent parts and detects relationships of the parts to each other and to the whole. The student distinguishes fact from hypothesis and from value judgments. The student identifies conclusions and generalizations. He or she can separate relevant from trivial data. Analysis also involves differentiation of one symbol from another symbol. Behavioral tasks for students associated with this domain

level are: analyzes, identifies, discriminates between, discovers, and detects.

Synthesis. The synthesis level of the cognitive domain may involve the display of creative behavior on the part of the learner. Student behavior at this level involves the organization of ideas into new patterns with emphasis placed upon originality. The learner tries various approaches. He or she demonstrates the ability to use results of research in solving a problem. Typical behavioral tasks expected of a learner at the synthesis level are: develops a plan, writes an essay, makes up a story, or designs a machine.

Evaluation. At the evaluation level of the cognitive domain, the student makes a judgment concerning the value of ideas, principles, methods, or solutions. The student uses a criteria to judge the efficacy of a concept or plan. Those who excel in evaluation recognize fallacies and differentiate opinions from fact. This level of the cognitive domain may be encountered at any phase of the learning process. It may precede acquiring new knowledge or occur at any other level of the cognitive domain. Behavioral tasks associated with student learnings are: compares, judges and supports, determines the best possible, and applies criteria for judging.

Affective Domain

Krathwohl (1964) has described the affective domain concept clearly. He has identified the various levels of this domain as receiving, responding, valuing, organizing, and characterizing.

Receiving. The lowest level of the affective domain is related to receiving behaviors of learners. At this level, the learner develops

an awareness of factors involved in the behavioral change expected. He or she is willing to receive instruction or input. Behavioral tasks associated with the receiving level of the affective domain are: acknowledges, pays attention to, shows awareness and appreciates.

Responding. This level places emphasis on overt responses of the learner. It involves realizations pertaining to motivations and feelings for doing a task and, hopefully, in attaining satisfaction in this affective response. Behavioral tasks for students at the responding level are: obeys, complies with, enjoys, is willing to, accepts responsibility.

Valuing. At this level of the affective domain, the student makes a preference for or chooses in a situation involving freedom of choice the learning stimulus eliciting the affective response. This level also stresses the importance of analysis, synthesis, and evaluation in structuring response behaviors of students. Behavioral tasks for students at the valuing level are: chooses from, prefers, rather than, is committed to, and desires to.

Organization. At this level of the affective domain, the students are involved with seeing how values may be implemented. They relate one value to others and conceptualize a value in relation to those of society or culture. Behavioral tasks associated with organization in this domain are: values above all else, cherishes, weighs alternatives, and judges people in terms of.

Characterization. In the affective domain, characterization involves dealing with the whole person and integrating the learned behavior into the total personal structure. At the characterization

level, one's role in society is exemplified. The learner develops a conscience, a philosophy of life, a code of behaviors that includes the affective behavior involved. Behavioral tasks for the learner are: Who am I?, What do I stand for?, and How do I act?

It is very difficult to assess real changes in behavior in the affective domain, particularly on a short-term basis. The different levels of responses are not so carefully identified as for the cognitive domain. Also, learners' responses in the affective domain tend to be somewhat more transitory, especially in the earlier levels of attitudinal development. Hence, expected learner outcomes in the affective domain are often stressed more as goals than as specific objectives in lesson plans.

Psychomotor Domain

Hauenstein (1972) identified five performance levels for the psychomotor domain. He projected that learning related to physical responses is subdivided into perceiving, imitating, manipulating, performing, and perfecting behaviors. Learning in the psychomotor domain is preceded by the student having a readiness for doing the physical skill. This involves having a mental, physical, and emotional state of being appropriate for the learning experience and also implies a willingness on the part of the learner to respond.

Perception. The perception level of the psychomotor domain parallels the receiving level of the affective domain; i.e., the learner must display an awareness of the actions involved in performing the skill being taught. Not only must the learner pay attention to the instructional task, but he or she must "see" what is expected to be

done. At this level, involvement of as many related senses as possible in the learning task is recommended. Sensory stimuli such as tasting, smelling, touching, as well as seeing and hearing, may well be involved in the learning process. Learning at this level may involve the "feel" of a successful performance of a task. Students should be encouraged to express their perceptions of the expected task. They should talk through it. Other behavioral tasks are: It seems that, feels like, is able to, tastes, smells, or hears.

Imitating. The first real step in skill performance after perceiving is imitation. The learner observes a skill being performed and then does his or her best to imitate the procedure which has been demonstrated. The major behavioral directives for the student are to follow directions by imitating and then responding to corrective criticism.

Manipulation. In the psychomotor domain, manipulation of materials or experiences is a must. After imitating the observed instruction, the learner has time to manipulate the materials or his/her body in the expected patterns. This manipulation involves the repetition of steps demonstrated in practice or drill sessions. The key behavioral term for this level is practice.

Performing. The performing level is a continuation of the practice sequence initiated in the manipulating level of this cognitive domain. It involves responding automatically in an habitual way. The beginning typist, for example, no longer remembers the learning exercises practiced to memorize the keyboard. The fingers automatically find the correct location without conscious thought on the part of the student.

In the performance level, the learner works to improve speed or quality of performance. Behavioral task indicators are: makes a habit of and habitually performs.

Perfecting. After the learner can deliver a predictable performance in the psychomotor domain, his or her learning is involved with perfecting the skill. He/she uses whatever action is needed to complete the task. This practice involves adaptation of the learned physical response to new situations. It may also involve adaptation of the response pattern to the unique physical assets or talents of the individual performer. Performance patterns which work best for most people may not be quite appropriate for the individual learner. At this level of performance, for example, coaches encourage individual athletes to adapt their responses to fit their unique body designs. Behavioral tasks are: manages, works successfully with, and creatively develops. The most creative performer is the one who uses his/her resources in unique ways to exceed the performance of others demonstrating model behaviors.

Learning--A Combination of Domains

The three domains and the levels within each are easily understood. What may not be so obvious is that a particular human behavior is not exclusively a cognitive, affective, or psychomotor function but a combination of all three domains. For example, safe and skillful operation of a machine lathe is classified as a psychomotor performance, but it involves, among other things, cognitive knowledge about what is safe--the safety rules. Furthermore, working safely and carefully goes beyond physical ability and knowledge. It also includes

an attitude--will the operator do what is known to be right and what can be performed physically?

The person who has a well-defined, consistent, and clear value system is performing at the upper levels of the affective domain. To achieve this level of performance, both knowledge of the possible consequences of the alternatives and the physical ability to communicate with others are needed to test the value system. The cognitive and the psychomotor skills thus support the affective behavior.

Even writing a pencil and paper essay test, which is considered a cognitive process, requires the physical movement of the pencil and the possession of a cooperative attitude to complete the test, thereby combining all three domains. Clearly, then, no domain operates alone.

There, however, is an advantage in thinking of outcomes in terms of being primarily in one dominant area. Once the teacher is aware of the domain that is dominant, it is easier to select the effective instructional technique to develop the intended outcome. Psychomotor skills are efficiently learned through demonstrations and practice, less efficiently learned from lectures and reading alone. When attempting to develop positive attitudes toward safety or a subject matter area, modeling and role-playing are more effective than lecturing. But when it comes to knowledge, particularly in the lower levels in the taxonomy, lecture, programmed instruction, and reading may very well be superior to demonstrations and role-playing.

In summary, the intended outcomes are the "stuff" the student learns. Cognitive stuff, such as describing the process of

photosynthesis, is related also to affective stuff such as attitudes of the student toward the learning task and psychomotor skills involved in the manipulation of laboratory materials needed to observe the process of photosynthesis more carefully.

SPECIFYING INTENDED OUTCOMES: DEVELOPING OBJECTIVES

Since the early 1960s, a development of major significance in instructional planning has been for educators to describe their learning objectives or expected outcomes in terms of measurable behavior. The purpose of an instructional objective is to communicate to students, teachers, and other interested persons what the student may expect to learn from a module of instruction. The statement includes a clear description of the observable behavior, the conditions under which the behavior will occur, and a measurable level of quality for the performance.

Once the observable behavior is clearly defined, it is easier to select the teaching/learning techniques that will be successful in introducing students to the concept, skill, or attitude, and to provide them with opportunities to practice the behavior. When the conditions are clear, students and teachers know what relevant references, time, equipment, information, and materials will be available in support of the students as they progress through the learning activities.

Finally, if the level of performance is stated, students will know when an objective is accomplished or why it was not accomplished. Then the teacher has a criterion that is useful in evaluating and reporting student progress.

Examples of Objectives

Program Objectives

Educators develop objectives for total programs. Following is a detailed statement of a program objective.

Upon completing the program's required industrial arts courses, the student will be able to use technical graphics to clearly communicate shapes, sizes, quantities, qualities, conditions, and conceptual information.

--Conditions: Upon completing the required industrial arts courses

--Observable

Behaviors: . . . use technical graphics to clearly communicate shapes, sizes, quantities, qualities, conditions, and conceptual information . . .

--Level of

Performance: . . . clearly . . .

Course Objectives

In objectives for specific courses or classes, each component of objectives becomes more specific. Following is an example.

Upon completing the course in technical graphics, the student will be able to make charts and graphs, isometric, orthographic, one- and two-point perspectives, pattern and schematic sketches that are accurate, complete, and neatly done.

--Conditions: Upon completing the technical graphics course . . .

--Observable

Behavior: . . . make charts and graphs, isometric, orthographic, one- and two-point perspectives, pattern and schematic sketches. . .

--Level of

Performance: . . . accurate, complete, and neatly done . . .

Unit Objectives

A unit objective describes a smaller segment of instruction and is even more precise, as in the following example.

Upon completing the unit on charts, graphs, and diagrams, and when given quantitative and conceptual information, the student will be able to design and sketch a chart or graph to communicate the quantitative data, and a diagram to communicate the conceptual information that is efficient, legible, well proportioned, and accurate.

--Conditions: Upon completing the unit on charts, graphs, and diagrams, and when given quantitative and conceptual information . . .

--Observable Behavior: . . . design and sketch a chart or graph to communicate the quantitative data, and a diagram to communicate the conceptual information . . .

--Level of Performance: . . . efficient, legible, well proportioned, and accurate.

Lesson Objectives

Finally, the lesson is the most specific level for which performance objectives are prepared. Try to identify each component in the objective that follows.

At the end of the lesson, and when given the number of base hits made by a fictitious baseball player in each of 10 games, as well

as a sheet of graph paper and a pencil, the student will be able to design and sketch a line graph that has the variable quantity and the fixed increment data on the correct axes, accuracy, uniform and legible lettering, and correctly spelled and capitalized words.

The following components should have been indicated in your analysis of the given behavioral objective for the lesson:

--Conditions: At the end of the lesson, and when give the number of base hits made by a fictitious baseball player in each of 10 games, as well as a sheet of graph paper and a pencil . . .

--Observable Behavior: . . . design and sketch a line graph . . .

--Level of Performance: . . . has the variable quantity and the fixed-incremental data on the correct axes, accuracy, uniform and legible lettering, and correctly spelled and capitalized words.

Writing Your Objectives

In writing your objectives, by using each of the three areas given in the above discussions, you are certain to include all components. Some of the following suggestions may be of assistance in helping you to write objectives completely.

Under conditions, place amount of time or space, available equipment, materials, tools, and information; deadline dates or times; number and kinds of available references, if any.

Under observable behaviors, be sure that this component describes something the student does that can be seen or heard.

Under level of performance, indicate percentage correct, expected number correct from number possible, descriptions of grammatical quality, plus or minus accuracy of sizes or computations, neatness, number of variables included in answer of essay questions.

When the objectives have been completed, they should be carefully checked. Look for the following points:

1. Are the objectives clear and concise?
2. Are the objectives realistic for the grade level?
3. Are the objectives attainable by instruction?
4. Are the objectives capable of being measured?
5. Are relevant conditions included?
6. Is the student behavior stated in behavioral terms?
7. Is the level of performance stated?

Exercise 1: Identifying Behavioral Domains

Directions: Read the following partially stated behavioral objectives carefully and decide which ones are measuring skills in the cognitive, affective, and psychomotor domains. Write the proper domain level in the blank provided. Then, discuss the level of the domain in which the objective is focused.

1. Once he understands them, the student will obey the traffic regulations in riding his bicycle.

   Domain _____

   Level:

2. The student will choose the appropriate tool for making a design in leather work.

   Domain _____

   Level:

3. The student will write his/her name correctly in shorthand figures.

   Domain _____

   Level:

4. The student will sew a button on his/her shirt correctly.

   Domain _____

   Level:

5. The student will write the blocking assignments for his position in football for every offensive play with 90% accuracy.

   Domain _____

   Level:

6. The student will demonstrate the appropriate procedure for folding a business letter.

   Domain _____

   Level:

7. The student will decide the tense of a specific verb in a given sentence.

   Domain _____

   Level:

8. The student will formulate an argument as to why the city of Starkville, MS, needs (or does not need) a change in city government.

   Domain _____

   Level:

9. The student will locate a book in the library by the use of the Dewey Decimal System.

   Domain _____

   Level:

10. The student will type a page without making more than one mistake.

    Domain _____

    Level:

Exercise 2: Writing Objectives Completely

Directions: In Exercise 1 are given 10 meaningful, but incomplete, statements of behavioral objectives. Rewrite each of these objectives so that it reflects all three components of conditions, observable behaviors, and levels of performance.

Exercise 3: Writing Objectives

Directions: The student will write behavioral objectives according to the directions given for each of the six levels of cognitive domain, the five levels of the affective domain, and the five levels of the psychomotor domain.

SELECTION OF METHODS FOR INSTRUCTION

Objectives: At the end of this instructional sequence, the student will be able to:

1. Distinguish among the three categories of teaching/learning techniques.
2. Recognize guidelines to select appropriate techniques to achieve stated objectives.
3. Select methods appropriate for achieving stated instructional objectives.

Identifying the Tools

Today's teachers have a multitude of teaching/learning techniques from which to choose. The techniques to be discussed are grouped into three categories--presentations, actions, and interactions. The key distinction between the categories is the role students play in the implementation of the teaching/learning methodologies. In presentations, students are relatively impassive. In the action techniques, however, students are actively engaged in manipulating materials, ideas, and tools. In interaction techniques, students are also active, but, in this case, they are active in interpersonal exchanges of ideas and feelings.

Presentation Techniques

Presentation techniques are most often selected to provide classroom management information (e.g., descriptions of assignments, clean-up procedures, schedules of activities, rules for student behavior) and subject matter information (e.g., procedures for

investigating a subject, facts, guidelines, interpretations, generalizations, and principles). Specific techniques used most often are formal, informal, and guest lecturers; demonstrations of manipulative skills, physical principles, and mechanical devices; audiovisual presentations; and field trips. Only brief descriptions of these methodologies will be given in this introductory planning module since these topics will be covered in greater detail in your methods classes for teaching specific subject areas.

The Formal Lecture. The lecture method has dominated the teaching scheme for hundreds of years. Often, formal lectures are ineffective since they are poorly planned and executed. Lectures are exciting learning techniques if they are well planned and skillfully delivered. To be effective, the lecture must be planned in a length appropriate for the age level of the audience. The lecturer must also commit sufficient time to organize and adapt the material to the audience. Most teachers prefer informal lectures to formal ones as instructional tools because of the large amount of time required to perfect a formal lecture.

The formal lecture is an oral exposition of facts, principles, procedures, feelings, or directions by the teacher. It is a strong, versatile and efficient way of bringing the teacher's views immediately into focus. Further, essential material not found in the reading can be presented vividly by a skillful lecturer. Limitations in the use of lectures are associated with the relatively low involvement of student participation. This condition limits the effectiveness of the formal lecture as a teaching device for children and adolescents. Instruction

by lecture also does very little to develop the social, communication, and physical skills of students. Henak's Lesson Planning for Meaningful Variety in Teaching gives a detailed outline for strategies to use in planning and implementing lectures (Henak, 1985).

The Informal Lecture. The informal lecture may be patterned after the formal lecture format. The rigidity of the formal lecture is reduced, however, because there are opportunities for students to interject ideas, to ask questions, and to provide examples from their own experiences during informal lectures.

Informal lectures may be used to provide background information on a topic, to introduce a major unit, to carry the main load of information for a unit, to summarize a segment of instruction, or to stimulate a person or group to behave in a particular way. The following generalized format is usually followed in an informal lecture: (1) Define terms; (2) Outline details or break down topic into subparts; (3) Summarize or close class by reviewing, condensing, and repeating its major points; and (4) Raise and answer questions. Again, Henak (1985) summarizes the major points required for implementation of an informal lecture.

Guest Lectures. Teachers often have the option of making a presentation themselves or of inviting someone else to make a presentation. A lecture by a guest has several advantages--utilizing expert knowledge or skills, providing variety, and presenting an alternative point of view--all of which can enrich class activities. Guest lecturers are usually introduced with a description of the person's position, experience, and special qualifications, the reason

the person was asked, the topic to be covered, and follow-up procedures. Then, a presentation is made by the speaker. Follow-up activities include expression of thanks to the speaker, questions, discussion, and other appropriate activities.

Demonstrations. Demonstrations are examples of teaching by showing. This technique employs sight and touch, as well as hearing, as a major means of communicating information. Manipulative skills, physical principles, and the working of mechanical devices are often more effectively taught by demonstrations than by any other method. Demonstrations include a presentation of the concepts and the apparatus, a discussion which clarifies misunderstandings and applications of the concepts which may include questions or other reinforcement activities as explained by Henak (1985).

Audiovisual Presentations. AV materials are used extensively and effectively in individualized instructional systems. In this module, their use will be restricted for use in regular classroom groups. Filmstrips, recordings, films, slide series, video programs, or combinations of these materials are grouped together here because the use of each is relatively the same in instructional planning.

Audiovisual presentations consist of a sequence of still or motion pictures, an audio narration, or a combination of both that is presented to the learner. Rather than being the message carrier in this teaching/learning technique, the teacher arranges for the operation or manipulation of the carrier and is primarily responsible for preparing the group for the presentation and for planning the application experience.

Such presentations bring sights and sounds to the classroom that are otherwise unavailable--sights and sounds that are too small, too large, too expensive, too perishable, too soft, too far away, too fast, too slow, too old, or too rare. Learners can also benefit from how-to lessons which may be presented effectively and consistently through the use of this medium. Finally, materials that show positive performance models of manipulative skills and interpersonal communication skills can assist teaching in these areas. Familiarity with AV materials and the careful planning of their use can increase the quality and diversity of teaching without significantly increasing the work load of teachers.

Field Trips. A field trip or tour is a carefully arranged visit by a group to an object or place of interest for firsthand observation and study. It may vary from a short visit to a single location to an excursion lasting several days and covering several states. Field trips serve basically six purposes:

1. As introductory experiences, they serve to develop a broad general understanding of the topic being studied. (Prior to studying a unit in "Communicating with Electronics," the class is taken to a radio or television studio to see it in operation.)

2. Summary or review activities are used as capstone experiences to crystallize and verify a number of related units or concepts that were presented earlier in the course. (When nearing the end of an automobile maintenance course, the class is taken to a large auto distributor's service area to view procedures, practices, and policies used in a commercial establishment.)

3. Interest is developed when a highly interesting trip is selected. One way to develop interest in the concept of automation is to visit a factory where routine tasks are being performed by robots.

4. Data collection is possible for taking a group of students to a location where they may make observations and record them for use in completing a project. Science students visit streams to collect water, soil, vegetation, and other specimens to study in the classroom.

5. Enrichment, variety, or challenge may be provided with field trips. (Skills in reading compasses and field instruments are tested on field trips.)

6. Broadened cultural experiences are enjoyed by student visits to museums, art galleries, theaters, concert halls, zoos, and the like.

Action Techniques of Teaching

Action techniques directly involve the learner with ideas, materials, objects, and equipment. Individually and in small subgroups, students experiment, construct, observe, and otherwise manipulate things for a variety of purposes.

One other most familiar use of action techniques is to provide students with opportunities to practice a skill, procedure, or process described in the learning objective. Action techniques, in this case, usually follow a presentation that describes or demonstrates the skill, and it is used as an application or a follow-up activity. Typing exercises or dribbling a basketball are examples.

Action techniques are also used to develop and understand a cognitive principle or concept. A presentation may be followed by an experiment verifying the principle or concept which is intended to

increase understanding. To illustrate, the teacher may lecture on the concept of interchangeable parts, followed by an experiment in which two groups assemble the parts of ball point pens. One group has the parts for 25 pens that are alike. The other group has the parts for 25 pens that are different. Comparing the speed of the two groups in assembling the pens will contribute to an understanding of the concept of interchangeable parts.

Closely related to this use of action techniques are the observation of phenomena and the transfer of a principle, skill, or process to a new situation. For example, the mechanical advantage of pulleys can be observed by conducting laboratory experiments with apparatus set up in the classroom. These principles can be applied to everyday situations by asking students to analyze the pulley systems used in hoists in automobile garages to lift heavy parts, or on farms to lift hay into barns and to stretch fences.

Another use of action techniques is to develop problem-solving skills. Objectives directly related to this use are often stated for many curriculum areas--industrial arts, science, home economics, and mathematics, for example. Student projects are described as problems rather than objects to be built and lead to action techniques which develop problem-solving skills. An example might be a situation in which students have to sit on metal stools in industrial arts laboratory. When the stools are moved, they scrape and ring with an irritating sound. The problem, then, is to reduce the noise level rather than build cushioned feet for the stools.

The kind of action techniques to be discussed include projects,

exercises, experiments, and guided observations.

Projects. Projects, defined in a broad sense, include any undertaking by an individual or a group that results in a tangible project. The product may be a written paper, a bulletin board, a photo essay, a smooth-running engine, or a sculpture, to name only a few. Projects provide students with opportunities to learn techniques, to practice skills, to illustrate principles, to solve a problem, or to perform creatively. They offer excellent opportunity for students to pursue personal interests and goals and to learn long-range planning skills. Henak (1985) reviewed different types of projects in detail and made several suggestions for their implementation as instructional tools.

Experiments. Experiments are conducted for at least three purposes: (1) to introduce students to the experimental approach to collecting data; (2) to collect data so that commonalities can be discovered, principles identified or conclusions drawn; and (3) to verify principles or conclusions. Two important guidelines to keep in mind when selecting experiments are to make certain that the principle or data is worth verifying or collecting and that students are interested in the topic.

Exercises. Unlike projects, exercises involve the completion of a task rather than a tangible product. Exercises are especially adapted to the practice of complex psychomotor and cognitive skills. The complex behaviors are actually a composite of several individual tasks. For example, developing a roll of film involves the ability to use a darkroom timer, to open a film cassette, to remove the exposed film, to

lead the film on the developing tank reel, to adjust the temperature of the chemicals, and to perform several other individual tasks. When using exercises as a teaching technique, it is recommended that necessary equipment, partially prepared materials, and printed procedures be provided so that students may work through the exercise with minimum frustration.

Guided Observations. Guided observations are most often used when topics are introduced. This activity is effective in helping students become aware of the particular characteristics of an object, the parts of a device, or other critical variations. For example, to teach map reading, the topic may be introduced by explaining the different types of maps and their general characteristics and purposes. Numbered examples of each map may then be distributed and students asked to name the maps verbally, to write the names in numbered blanks, or to match the names with numbers on a response form. Individual creativity will provide numerous other ways of using guided observations to help students become aware of the important variations involved in concepts.

Planning Interaction Techniques

Interaction techniques of instruction are designed to capitalize on the human desire to talk and share ideas. Personal interaction is an activity in which two or more people are actively involved in exchanging ideas. Therein lies one major advantage of these techniques: Students become varied resources, vital and necessary elements of the teaching/learning environment. Their ideas are received and respected.

In this environment, the teacher plays an important role. It is

the teacher who creates groups of the appropriate size and with the necessary skills, and who helps the groups identify attractive attainable goals. To achieve these goals, the teacher must be proficient in soliciting, understanding, and reacting to each student's response.

Interaction techniques are useful when the class activities center around:

1. Solving a problem in which a number of diverse opinions will contribute to a solution (identifying a way to raise funds for a class field trip).

2. Responding to a problem that most students will confront when they enter life roles (reacting to unearned criticism).

3. Making value judgments (driving within the 55 mile per hour speed limit).

4. Developing an understanding of and feeling for another point of view (seeing both labor and management's views on wages vs. productivity questions).

5. Helping members of the class share with each other the result of their efforts and seek assistance in solving individual problems (conducting a weekly or biweekly seminar for students working on exploratory projects).

6. Soliciting information from a specialist in the field related to the unit of study (interviewing a student's parent who is a doctor concerning health questions).

Interaction techniques to be considered in the following pages include questioning, discussions, buzz sessions, brainstorming,

seminars, interviewing, role-playing, gaming, committees, and debates. The student is also referred to the module on Effective Classroom Interactions developed for this class.

Questioning. Throughout life, people use questions to gain information. In teaching, questions are used extensively in another way--to facilitate learning. The first use of questions to facilitate learning is to diagnose student levels of achievement at the beginning of a segment of instruction. The second use of questions is to assess achievement at the end of a segment of instruction. The third use of questions to facilitate learning is to include them in the orientation of a lesson to promote interest and motivation. The fourth use of questions to facilitate learning is to select queries that encourage students to think more deeply on topics and challenge their reasoning power. Use of four types of questions is recommended.

1. Closed questions fall short of encouraging or developing participation in classroom discussions. They may be either an identification question (What kind of bird is this?), a selection question (Who was right, Aaron Burr or Thomas Jefferson), or a yes/no question (Is the first step in problem-solving to get the facts?).

2. Probing questions are designed to clarify (What do you mean?), to justify (Why?), to refocus (to redirect "left field" answers), to expand (Are there other thoughts on this point?), and to reduce (Do you agree?).

3. Divergent or open-ended questions require the student to think into the future (What will happen or what will it be like when . . .?), to fantasize (What would you do if you were marooned . . .?), or to

guess (What would happen if Congress . . .?).

4. Evaluation questions require the student to make judgments about facts (What is your opinion of . . .?).

Discussions. Discussions are supervised conversations in which informed students take an active role by sharing their ideas about the topic under review. This technique can contribute greatly to individual development. It is effective in expanding the cognitive and affective dimensions of students. When they prepare themselves on a topic in a variety of ways and then come together to discuss each person's point of view, students will increase their understanding of the topic. Also, with a group of people holding different attitudes, a discussion which aims at clarifying values can contribute greatly to the maturity of the participants.

Discussions are also beneficial in determining the level of achievement and attitudes held by students in a particular area. Finally, this technique has potential for helping students acquire skill in participating in a free exchange of ideas as contributing group members. It affords them the opportunity to express ideas, to share in a verbal interaction, and to work out a logical presentation of points on a topic.

The discussion technique is most useful when objectives are related to clarifying values and ideas and to problem solving. When well implemented, the technique can result in social growth as well as in individual learning.

Buzz Sessions: In buzz sessions, the class is divided into small discussion groups of from five to seven students for the purpose of

improving student involvement. There are essentially two kinds of buzz sessions which provide an opportunity for more students to participate in the planning of a future class activity. The objective of the session may be to formulate questions for an interview with a guest or to discover new areas of special interest to be considered as topics for future lessons. When the technique is used in this way, students become involved in the planning without speaking in front of the entire group.

The second kind of buzz session is a "reaction" activity following a major presentation. Members of the subgroup discuss the problem, difficult questions, or controversial issues presented earlier.

Brainstorming. When the quantity of ideas is more desirable than their quality, the brainstorming technique may be used. Brainstorming is a problem-solving activity aimed at stimulating and generating ideas and facilitating their expression. It is most useful in finding solutions to problems that have few easy or obvious solutions.

Group members are asked to suggest as many ideas as possible without the threat of censure or evaluation. Uninhibited and "free-wheeling" solutions are urged with little thought given to their practicality. This practice catalyzes ideational fluency.

Seminars. This technique was developed to facilitate communication and to coordinate the abilities of several individuals. A structured group, the seminar meets periodically or as the group deems necessary. As a community effort, it can contribute to the goals of the group or of individuals by:

--Utilizing each individual's abilities to contribute to the effort

of others.

--Mutually reinforcing each participant's efforts.

--Making the group more cohesive.

--Allowing students to develop skill in communications in organized meetings.

--Developing proficiency in critically analyzing, challenging, and questioning the ideas and procedures of others.

Interviewing. Interviewing is one of the communicative arts used extensively in journalism and the broadcasting industry. Students who learn to communicate through this process learn how to use human resources very effectively.

There are essentially two approaches for interviewing specialists: The interviewer(s) may go to the specialist, or the specialist may come to the school. Probably the three most useful characteristics of the interview technique are its inherent mobility, its utilization of community talent, and its availability to the learner seeking potential resources outside the school.

The depth and quality of the information gathered are directly related to the quality of questions asked, the knowledge of the person being interviewed, and the curiosity and motivation of the interviewer.

Interviewing is both a process and content. As a process, it is an effective method for learning, if well used. In order that the interview be successful, the student must learn several essential skills which become part of the course content. Among these skills are the following:

--Selecting productive talent to interview.

--Preparing appropriate questions.

--Using a questioning strategy.

--Recording and reporting results.

Role-playing. Role-playing may be defined as a method of human interaction that involves realistic, spontaneous behavior in an imaginary situation. The technique is used most often for training in human relation skills. It is also useful in training in sensitivity to people and situations. The learning process encourages initiative and self-reliance on the part of the participant. Discussion is stimulated, and the use of role-playing is employment of another technique in group problem-solving.

Among the values of role-playing are the following:

--Individuals can experiment with new ways of behaving.

--Situations and roles may be tailored to individual needs and interests.

--Students can practice real-life situations and risk making mistakes without suffering consequences of those mistakes.

--Students can observe and analyze more objectively because a role is being played.

--Students can learn by doing.

--Individuals will be more apt to say what they feel rather than what they think another individual wants to hear.

--Real-life behavior may be brought into the classroom.

--The potential for training in human interaction skills is unequalled.

Special caution is often needed in the employment of role-playing

as a human interaction technique. In this process, feelings of individuals get quickly involved in the learning process. In some students, strong emotional reactions are keyed by role-playing. Students may experience difficulty in handling these emotions in front of the group and may over-react. Such situations usually create personal embarrassment for the participants. The teacher must be prepared to help students handle these situations with security and calmness. Emotional outputs are not unusual, particularly among adolescents.

Gaming. This technique in teaching is a way of making learning fun. In free play, children invariably appear to seek out or fabricate ways to compete fairly among themselves or to simulate an agreed-upon segment of their world. Educators can capitalize on this seemingly natural phenomenon by selecting or designing classroom gaming techniques.

There are basically two types of games--the simulation game and the question/answer game. The simulation game focuses upon a segment of a societal activity. Through questioning and decision making, the student advances in the activity and, as a result, better understands the dimensions, procedures, and critical conditions involved in the game. Although this type is difficult to design, such games are used by teachers proficient in gaming theory.

The second type, the question/answer game, is easier to design and use and is quite adaptable to any subject matter. Rules are patterned after a familiar game such as Jeopardy, baseball, or bingo. Questions may be based on subject material generated by the teacher or from

reading materials in the assignments of the students. Teams of students compete to determine who knows more of the questions asked. Working in such teams encourages cooperative learning among the team members and also features competitive learning in a relatively unthreatening way.

Committees. A committee is a small group of people who have been identified to perform a task that is too large for an individual or too cumbersome for a larger group. Committees are created to perform one or more defined responsibilities.

Committee work in the classroom provides many opportunities for the student to develop social skills such as cooperation, leadership, fellowship, and the power of persuasion.

Debates. The debate is a pro and con discussion of a question or issue that involves two teams of three to four students, with voluntary participation by the remainder of the class. This teaching/learning technique is an excellent way for team members to learn about a topic. It is inefficient in bringing full understanding to an entire group. The primary reason for use of this technique is to develop the analytical, communicative, and persuasive skills of the participants.

PLANNING LESSONS

Objectives: When you have completed this work segment, you will understand enough about the elements of a lesson and a lesson plan form to enable you to:

1. State verbally six to eight elements normally found in a lesson plan.
2. Write a draft of a lesson plan in your subject area designed for instruction at a specific grade level.

Lesson Components

Three elements are included in nearly all lessons. They are orientation activities, development activities, and follow-up activities. Orientation in the lesson involves communicating an understanding of the purpose of a lesson including exhortations, extrinsic rewards, use of deductive and intrinsic approaches, use of tie-ins, and stating the aims of the instruction. Developmental activities include presentation and application activities. Follow-up activities include summaries, correlations of data, crystallization of concepts, development of transfer knowledge, descriptions of assignments, and a documentation of proposed evaluative activities. More concretely, an outline for lesson plans is given in Figure 1. In Appendix 1 is also given an example of a lesson plan.

Orientation

The orientation is designed to motivate the learner to engage in teaching/learning activities. Three typical functions of the orientation are to establish the purpose of the lesson, to tie-in the

lesson with previous learnings, and to state the objectives or aim of the lesson.

Purpose of Lesson. Students will engage in activities if they feel that what they are learning is of value. One of the most used and probably least effective methods for establishing purpose is exhortation. If the student values the teacher's opinion, an occasional use of exhortation may be effective, but repeated use of the technique will result in little, if any, motivational effect.

Extrinsic rewards such as grades, recognition, or praise usually help to motivate students and are especially used in prompting learners to make initial responses. The teacher, however, is cautioned to use praise carefully. Research findings relative to the appropriate use of praise is discussed in the module related to classroom interactions.

A deductive approach is employed when the teacher describes practical ways in which learners can use the understanding, skill, or attitude. This technique not only helps students understand why the objective is of value, it also helps the teacher select activities to which students can relate more closely. In this approach, the teacher describes the concept and then gives examples of its applications.

The intrinsic approach is the most difficult but probably the most effective when used with brighter or more mature learners. To implement this technique, questions or situations are devised to stimulate curiosity about the principles, skills, or procedures to be learned. A question such as "What do you think about having a nuclear-powered generating plant built on the south side of town?" may be used to introduce a unit or activity dealing with generation of electricity.

Any of the techniques described are designed to answer the question "Why should I spend my time doing what the teacher has planned?" This function is best served when the purpose is stated early in the instruction and is repeated periodically thereafter.

Tie-in. A second function of the orientation is to clarify how the new learning activities fit into the preceding or following experiences of the students. This function is especially necessary if the new activities appear unrelated to previous activities. Such sentences as "Remember when we developed and sequenced the manufacturing process?, We will now use that sequence in designing our plant layout" should help tie together class activities and orient students to the lesson.

Stating the Objectives. Several studies (Pierce & Forbes, 1977) suggest that revealing the objectives or aims of a lesson assists learners in reaching the objective. Stating the aim helps students focus their energies on tasks relevant to it.

Development of Lesson

The development portion of the lesson includes the implementation of the teaching/learning techniques that have been selected to help the learners achieve the objective. This is the time when the teacher leads the activities, and the students carry them out. This element of the lesson involves the presentation by lectures, demonstrations, audiovisuals, or field trips; and the applications by exercises, discussions, group work, projects, assignments, or other techniques.

In the presentation portion of the lesson, information related to management of the activities and subject matter related to lesson objectives is presented. When a cognitive objective is the focus of

the lesson, lectures of all kinds, demonstrations of principles, and audiovisual presentations may be used effectively. If a psychomotor objective is the target, demonstrations and how-to audiovisual presentations are often used. The learner, however, must be provided with "hands-on" or practice time to master psychomotor objectives. In the case of affective objectives, presentations are often directed toward the use of interaction activities, such as role-playing, discussions, simulations, and interviews.

The application portion of the lesson provides students with opportunity to practice or perform the behavior described in the objective. Application activities cover the range of action and interaction techniques. If the objective is cognitive, students may discuss a topic, play a drill game, conduct an experiment, or become involved in other techniques which help them to use the new understanding.

Application activities that lead to achieving a psychomotor objective may include a project, exercise, or experiment. These activities offer the student opportunity to practice skills demonstrated in the presentation portion of the lesson.

Activities designed to apply affective behaviors might include role-playing and discussions. Role-playing requires that students act out feelings of others. Discussions can bring out logical consequences of decisions and points of view.

Follow-up

Follow-up activities provide opportunities to obtain closure on an idea by solidifying the concept, building greater understanding or

skill, and transferring knowledge from classroom use to life situations. They may include summaries, assignments, and evaluations.

Summaries. Summaries pull together the happenings in the lesson and relate them to the objectives. Summaries can help students correlate data. Following an experiment on factors affecting the speed of a pendulum, students can correlate the effects of various pendulum arm lengths, variations in the weight of a pendulum bob, and the number of pendulum periods completed in a minute in a given condition. From this analysis, the students can summarize the effects of the length of pendulum arms and the mass of their bobs to how fast the pendulum swings.

In summaries, the teacher can help crystallize a concept by asking for specific examples to illustrate a concept presented earlier. Hopefully, the examples elicited will be different from those given in previous instruction.

Use of the "springboard" function in summary activities sets the stage for future activities. In social studies class, the statement: "Now that we have learned about several events that contributed to the settling of the West, we can identify individual projects that will help us understand them more fully."

The summary is also useful in developing transfer knowledge. The following question will help students apply to new situations what they have learned about economics: "On the basis of what we have learned about the concept of supply and demand in determining the cost of gasoline, how would you explain the variations in the prices of grapes in the supermarket?"

Assignments. As a follow-up activity, an assignment is specific work to be done by students outside of class time. Assignments may be used to reinforce the classroom activity. When studying pollution of the environment, for example, students may visit an industrial firm, interview an environmental engineer, prepare a report on a company's efforts to protect the environment, or do any number of other activities to reinforce the concepts discussed in class.

Take-home projects like sculpturing, drawing, and typing are useful in psychomotor development activities. Written assignments and drill problems aid students in developing cognitive skills. Higher level affective objectives may be achieved when students try out new positive attitudes in life situations.

A preparation assignment is one in which the student acquires, in a self-directed way, the knowledge needed for future use in discussions, debates, competitive games, or oral reports. Such assignments may be in the form of reading, viewing a television program, or observing specific audiovisual materials.

Evaluation

Evaluation activities may include specific questioning, short paper/pencil tests, or example problems administered at the end of the lesson. Other techniques may include teacher observations and assessment of student performances and works on a rating scale. Peer evaluations and student self-evaluation are other useful techniques for use in some cases. Through these methods, teachers can determine whether or not to go forward with the lesson. They can also identify students having difficulty as well as specific areas where review is

necessary.

In instruction, evaluations are of two types: process and product. In process evaluations, the teacher determines whether the elements of the instruction (instructional methodologies, materials, experiences) are working properly. In product evaluation, the teacher assesses student gains relative to the development of new understandings, skills, and attitudes.

Format of Lesson Plans

The tangible product developed as a result of specifying a lesson is the lesson plan. Lesson plans are to the teacher what drawings, specifications, and bills of material are to the furniture builder. They should be complete enough so that any qualified person can teach from them. They should not be too brief. They should include a systematic form and all important components. There are several practical reasons for including certain details in lesson plans.

First, a well-thought-out, detailed lesson plan indicates careful preparation. Second, with a detailed plan, information can be adapted for use in later instruction without much additional work. Third, a detailed lesson plan is useful for review to determine needed changes in instruction. Fourth, a detailed plan facilitates the securement of needed supplies and materials. Fifth, the well developed lesson plan serves as a guide for substitute teachers to carry on regular class activities. Sixth, a well developed plan is protection against liability. If the teacher can offer proof that safety procedures are taught in certain classes, it is more difficult to show negligence on the teacher's part. For example, science teachers would include safety

rules related to heating liquids in test tubes. Among the many possible precautions that might be listed are the following: Heat the test tube evenly by keeping it moving over the flame; point the test tube away from others; avoid breathing fumes; and put the test tube in a holder.

Although the importance of lesson plans is great, their format is not. In preparing a lesson plan, it is recommended that the student consult with his/her specialist professor in the subject matter area to determine the preferred style for use in his/her specific discipline.

FIGURE 1

Outline for a Lesson Plan

I. Title

II. Objective(s)

III. Equipment

- A. Teacher
- B. Student

IV. Material

- A. Teacher
- B. Student

V. Content and Procedures

- A. Orientation
- B. Development
  - 1. Presentation
  - 2. Application
- C. Follow-Up
  - 1. Culminating Activity
  - 2. Evaluation

VI. References

Exercise 4: Classroom Observations

You have been scheduled to complete 12 observations in classrooms of teachers giving instruction in your specialty area in the public schools. You are to visit the classes of the teachers at the regularly scheduled time. At the completion of each visit, you are to fill in the requested data on the appropriate reaction sheets found in Appendix 3.I-XIV of this module. These observation notes are planned to assist you in becoming aware of the objectives, methods, and classroom interactions employed by the teachers in the instructional process.

APPENDICES

Appendix 1

A Model Lesson Plan

LESSON TITLE: Identifying Carbohydrates

OBJECTIVES: At the conclusion of this lesson, when given three unknown food supplies, test equipment, test indicator solutions, and procedures, the student will be able to:

1. Conduct the experiment.
2. Correctly identify each unknown food sample.

TEACHER ACTIVITY

Equipment

1 beaker (250 ml)

6 test tubes

1 hot plate

2 droppers

Materials

Benedict's solution

1% glucose solution

Iodine solution

1% starch solution

Egg white

Biuret solution

STUDENT ACTIVITY

Equipment

1 beaker (350 ml)

3 test tubes

1 hot plate

2 droppers

Materials

Food sample 1

Food sample 2

Food sample 3

Benedict's solution

Biuret solution

Iodine solution

3 laboratory data sheets

CONTENT AND PROCEDURES

I. Orientation

A. Verify readings

B. Learn chemical analysis procedures

C. Analyze common foods

II. Development

A. Presentation

1. Demonstration: Identifying sugar

a. Prepare specimens

(1) Put two drops water in one test tube

(2) Put two drops glucose in another test tube

b. Heat both specimens in water bath to 100 degrees C.

c. Add three drops Benedict's solution to each

d. Observe color change

2. Demonstration: Identifying starch

a. Prepare specimens

(1) Put two drops water in one test tube

(2) Put two drops starch in another test tube

b. Heat both specimens in water bath to 100 degrees C.

c. Add two drops iodine solution to each

d. Observe black in starch

3. Demonstration: Identifying protein

a. Prepare specimens

(1) Put two drops water in one test tube

(2) Put two drops egg yolk in another test tube

b. Heat both specimens in water bath to 100 degrees C.

c. Add two drops Biuret solution to each

d. Observe purple in egg yolk

B. Application: Experiment

1. Given

a. Three food samples in test tubes

b. Three laboratory data sheets

c. Teams of two

2. Procedure

a. Place specimens of each sample in three separate test tubes

b. Add three drops of each test solution to respective test tubes

c. Observe colors

d. Complete laboratory data sheets

III. Follow-up

A. Determine which food material was present in each test tube

B. Identify other food sources which might be used for testing starches, sugars, and protein

Appendix 2

Test 1: Behavioral Objectives

Directions: Choose the correct response that properly completes the following items and write its accompanying letter in the blank to the left of the item.

_____ 1. Readiness as a necessary state for learning is identified by Bloom to be present in the following two domains.

a. cognitive and affective
b. cognitive and psychomotor
c. affective and psychomotor

_____ 2. The psychomotor domain level which is involved with sensory stimuli is

a. perception
b. imitation
c. manipulating
d. performance

_____ 3. The synthesis level of the cognitive domain could be best described as the students' ability to

a. reproduce information given to him/her.
b. criticize a given construct.
c. create a new response or product.
d. interpret information.

_____ 4. Application, as a level in the cognitive domain, illustrates the student's ability to

a. use information to solve problems.
b. reproduce information.
c. understand information.
d. offer a critical judgement about a problem.

_____ 5. Response, in the affective domain, to indicate growth or change in behavior may be

a. positive, or in agreement with an idea.
b. negative, or in disagreement with an idea.
c. either agreement or disagreement.
d. neutral, no response given to an idea.

_____ 6. In terms of preparation for living, Bloom would feel that which of the following domains is more important to emphasize in an overall educational program?

a. cognitive
b. affective
c. psychomotor
d. neither of the above

_____ 7. Which of the following portions of stated objectives would be considered ambiguous, or too vague, for precise measurement of student growth?

a. to defend a position on a question
b. to classify animals according to phyla
c. to make a model of Shakespeare's theater
d. to be patriotic to his/her country

_____ 8. Which of the following indicators would indicate less progress in a student toward self-actualization?

a. The student changes the subject away from the topic under consideration.
b. The student defends his/her reasons for opposing a position or a point of view.
c. The student asks questions which challenge the viewpoint being presented.
d. The student does library work to find out information about a question.

_____ 9. Which of the following is NOT an important characteristic of behavioral objectives?

a. They should be specific in what is to be learned.
b. They reflect a way for accurate measurement.
c. They should specify the type and level of response expected.
d. They should describe the teacher's plan of attack in teaching the material.

_____10. Behavioral objectives are useful to the teacher in that they

a. assist them to be more consistent in planning and testing the outcomes of learning experiences.
b. define the prerequisites for mastery of a set of materials (a course, unit, grade).
c. assure administrators that the teachers' objectives fit in well with the goals of a school.
d. do all of the above.

Appendix 3

Learning Activities Associated with Planning

I. THE INSTRUCTIONAL PROCESS

A. Performance Objective

After completing classroom observation, the TC should be able to analyze the instructional process: What the teacher was trying to teach, how the teacher was teaching, how students were learning, and how it could be discerned that learning was taking place.

B. Performance Tasks

1. Observe a lesson being taught. Identify the instructional content.

2. List activities that students were required to do to learn the content.

3. List the activities or events performed by the teacher to facilitate student learning.

4. Identify the means used by the teacher to determine if the students were learning the content.

II. MOTIVATION 1

A. Performance Objective

After completing classroom observation, the TC should be able to identify levels of student motivation and suggest ways of improving it.

B. Performance Tasks

1. Observe a lesson being taught. How interested do students seem to be in what they are being taught?

_____ very interested _____ interested
_____ somewhat interested _____ not interested

2. How pleasant are most students in the learning situation?

_____ very pleasant _____ pleasant
_____ somewhat pleasant _____ unpleasant

3. How much success do students seem to be having in learning the content?

_____ much success _____ little success
_____ moderate success _____ no success

4. Indicate the number of students in the class that appear to be motivated to the following degrees:

_____ extremely motivated _____ slightly motivated
_____ moderately motivated _____ not motivated

III. MOTIVATION 2

A. Performance Objective

After completing classroom observation, the TC should be able to identify motivation techniques and suggest appropriate motivational devices.

B. Performance Tasks

1. Observe a teaching/learning activity. List techniques used by the teacher to motivate students.

2. Identify other motivational techniques that would be appropriate for this particular lesson.

3. Identify a student in the classroom who doesn't seem to be responding to the teacher's motivational techniques. Propose an individualized motivational technique that may be desirable for the identified student and explain how it should be implemented.

IV. STUDENT INTERESTS

A. Performance Objective

After completing classroom observation, the TC should be able to identify the relationship between content and student interests and suggest ways of relating the two.

B. Performance Tasks

1. Observe a teaching/learning situation. Identify ways in which the teacher has related the subject to the students' interests.

2. Identify other possible ways in which the given subject area could be related to the real world of the students.

3. Propose highly novel or creative ways in which the subject area observed could be presented to better relate it to student interests.

V. PLANNING (P)

A. Performance Objective

Given the opportunity for public school classroom observation, the TC should be able to identify a given instructional plan, as well as prepare his or her own instructional plan for a given learning experience.

B. Performance Tasks

1. Observe a teaching/learning experience. Prepare a report outlining the apparent instructional plan being followed by the teacher. Check with the teacher and compare his or her plan with what you have observed.

2. Assist the teacher in preparing an instructional plan for another teaching/learning activity. Obtain a copy of the plan and analyze it carefully. Then observe the teacher and describe how he or she carried out the plan.

3. Obtain from the teacher a list of the instructional content to be taught within a 30-minute to 2-hour time span. Prepare an appropriate instructional plan for the content identified and time allotted.

VI. DETERMINING GROUP EXPERIENCES

A. Performance Objective

After a two-week period of public school classroom observation, the TC should be able to identify group experiences aimed at student learning of the given content.

B. Performance Tasks

1. Observe a teaching/learning situation. List what appear to be the objectives of the lesson.

2. Identify and describe the large- or small-group experiences the teacher is using to teach the identified content.

3. Identify which experiences appear to be most effective; specify your reasons. Also, identify which experiences appear to be least effective; specify your reasons.

4. Identify and describe one large-group and one small-group activity that may be effective in teaching the identified content and has not been used by the teacher observed.

VII. INSTRUCTIONAL OBJECTIVES (P)

A. Performance Objective

Given the opportunity for public school classroom observation and individual or group instruction concerning instructional objectives, the TC should be able to prepare instructional objectives for a given instructional plan.

B. Performance Tasks

1. Observe a teaching/learning activity and prepare a list of what appear to be the objectives of the activity.

2. Take your preliminary list of objectives and write them in specific terms. In particular, indicate what the students should be able to do after receiving instruction.

3. Describe what types of evaluative activities might be used to assess whether the students have accomplished these performance objectives.

4. Obtain from the teacher an instructional plan for a given teaching/learning experience. Prepare a list of performance objectives for the plan.

VIII. SELECTING TECHNIQUES

A. Introduction

Throughout your education, you were exposed to various forms of teaching techniques including lectures, discussions, panels, individual assignments, and demonstrations. Some of these techniques worked for some teachers but failed for others. And some of the techniques worked for some classes but not others.

B. Directions

Specify the type(s) of teaching technique(s) that would most likely be effective for you and the following classes of learners in the subject and/or grade level of your choice. Indicate how you would implement the technique(s).

Class 1 A group of 38 students of all ability levels with no apparent common interests; categorized as an average group.

Class 2 A group of 30 students of low academic ability; most lack motivation and interest in the subject and in school, in general.

Class 3 A group of 15 high-academic ability students; extremely motivated and responsible.

Class 4 A group of 25 students, all of about average ability; some are motivated, some are not.

IX. INSTRUCTIONAL STRATEGIES

A. Performance Objective

After completing classroom observation, the TC should be able to identify and describe specific classroom techniques and methods suitable to a given level and teaching content area.

B. Performance Tasks

1. Observe a minimum of four teacher lessons in the same class. Prepare a list of instructional units, describing the content area taught and grade levels involved.

2. Outline how the teacher proceeded in teaching each unit observed.

3. Specify the processes that appeared to be the most successful. Briefly explain your choices.

4. Specify the processes that appeared to be unsuccessful. Again, briefly explain your choices.

5. Prepare an outline of an alternative process to one of the processes that you observed.

X. LARGE-GROUP INSTRUCTION

A. Performance Objective

Given the opportunity for public school classroom observation and participation, the TC should be able to prepare and carry out a large-group instructional activity for a given group of students.

B. Performance Tasks

1. Assist in planning and delivering a large-group instructional activity. Describe the plan and the teaching/learning experiences. Indicate the apparent effectiveness of the experiences.

2. Outline an instructional plan for a large group of students. Include specific objectives as well as media, activities, and evaluation. Obtain the cooperating teacher's approval of the plan.

3. After receiving approval from the cooperating teacher, teach one lesson as planned.

4. In a paragraph, indicate the apparent success or failure of the instruction, giving specific reasons for your feelings.

XI. EDUCATIONAL MEDIA

A. Performance Objective

Given the opportunity for public school classroom observation and participation, the TC should be able to identify various procedures and applications of educational media and assist in their production and use.

B. Performance Tasks

1. Observe a minimum of three hours of teaching/learning experiences. Prepare a list of all the media utilized in the activities. Include such things as bulletin boards, exhibits, models, projectors, filmstrips, slides, motion pictures, recorders, phonographs, TV, programmed instruction, and chalkboards.

2. Describe how each type of media was used and how it apparently affected learning.

3. Assist teachers in utilizing as many types of media as possible. Prepare a list of these media, describing how each was used.

XII. PHYSICAL ENVIRONMENT

A. Performance Objective

After completing six weeks of public school classroom observation, the TC should be able to identify desirable qualities of the physical classroom and describe how these qualities may be achieved and maintained.

B. Performance Tasks

1. Describe the physical environment of the classroom you are observing. Include such things as heat, light, ventilation, space, desks, location of chalkboards, and the like.

2. Prepare a list of environmental facilities or practices that appear to be inadequate. Indicate your reasons.

3. Describe how the physical environment of the classroom could be improved. Recommend changes, additions, or alleviations that may create a more effective learning climate.

XIII. THE PHYSICAL PLANT

A. Performance Objective

After completing six weeks of public school observation, the TC should be able to describe the types, location, and purposes of the physical facilities of a given school.

B. Performance Tasks

1. Tour the facility in which you are observing. Prepare an illustration of the school's floor plan, indicating locations of classrooms, gym, offices, and so on.

2. Describe what can be seen in each of the following areas at the time you are observing it: cafeteria, gym, main office, auditorium, study hall, hallway, and teachers' lounge.

3. Indicate the main purpose of each of the areas observed.

XIV. EQUIPMENT

A. Performance Objective

After completing six weeks of public school classroom observation, the TC should be able to list common types of equipment and materials--as well as their desirable condition, location, and arrangement--for a given instructional program.

B. Performance Tasks

1. Prepare a list of all the equipment and nonconsumable supplies in the classroom observed.

2. Illustrate the location, arrangement, and condition of the equipment and nonconsumable supplies in the classroom.

3. Suggest improvement for the acquisition, safe use, storage, and maintenance of the classroom's equipment and nonconsumable supplies.

4. Prepare a plan or list of procedures concerning the acquisition, safe use, storage, and maintenance of equipment, supplies, and other materials.

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